

IN THE CLAIMS:

Claims 2, 4, 6, 19, 27-43, and 56-65 were previously cancelled. Claims 1, 3, 5, 7-18, 20-26, 44, 46, 47, 49-55, 66, and 67 have been amended herein. All of the pending claims are presented below. This listing of claims will replace all prior versions and listings of claims in the application. Please enter these claims as amended.

Listing of Claims:

1. (Currently amended) A substrate assembly, comprising:
a substrate;
a layer of resilient conductive material disposed proximate a surface of ~~said~~ the substrate, ~~said~~ the layer of resilient conductive material defining a plurality of electrically isolated conductive traces and a plurality of electrically isolated spring-biased electrical contacts, each electrically isolated spring-biased electrical contact extending from one of ~~said~~ the plurality of electrically isolated conductive traces and further including a surface configured for biasing against and electrically contacting a lead element of an integrated circuit device; and
a plurality of vias disposed in ~~said~~ the substrate, each via of ~~said~~ the plurality of vias opening onto at least ~~said~~ the surface of ~~said~~ the substrate and comprising a recess into which one of ~~said~~ the plurality of electrically isolated spring-biased electrical contacts may be deflected.
2. (Cancelled)
3. (Currently amended) A substrate assembly, comprising:
a substrate;
a laminate sheet of resilient conductive material bonded ~~said~~ to the substrate proximate a surface thereof, ~~said~~ the laminate sheet of resilient conductive material defining a plurality of

electrically isolated conductive traces and a plurality of electrically isolated spring-biased electrical contacts, each electrically isolated spring-biased electrical contact extending from one of ~~said~~ the plurality of electrically isolated conductive traces and further including a surface configured for biasing against and electrically contacting a lead element of an integrated circuit device; and

a plurality of vias disposed in ~~said~~ the substrate, each via of ~~said~~ the plurality of vias opening onto at least ~~said~~ the surface of ~~said~~ the substrate and comprising a recess into which one of ~~said~~ the plurality of electrically isolated spring-biased electrical contacts may be deflected.

4. (Cancelled)

5. (Currently amended) A substrate assembly, comprising:

a substrate having a first surface and an opposing second surface;

a layer of resilient conductive material proximate at least a portion of at least one of ~~said~~ the first and second surfaces of ~~said~~ the substrate;

at least one spring-biased electrical contact formed in ~~said~~ the layer of resilient conductive material and electrically isolated from ~~said~~ the layer of resilient conductive material by an aperture formed in ~~said~~ the layer of resilient conductive material, ~~said~~ the at least one spring-biased electrical contact including a surface configured for biasing against and electrically contacting a lead element extending from an integrated circuit device; and

at least one conductive trace formed in ~~said~~ the layer of resilient conductive material and electrically isolated from ~~said~~ the layer of resilient conductive material by at least one cavity, ~~said~~ the at least one conductive trace terminating at ~~said~~ the at least one spring-biased electrical contact; and

at least one via extending through ~~said~~ the substrate and disposed at a location aligned with ~~said~~ the at least one spring-biased electrical contact such that ~~said~~ the at least one spring-biased electrical contact may be deflected into ~~said~~ the at least one via.

6. (Cancelled)

7. (Currently amended) The substrate assembly of claim 5, wherein ~~said~~ the at least one via opens only onto ~~said~~ the at least one of ~~said~~ the first and second surfaces of ~~said~~ the substrate.

8. (Currently amended) The substrate assembly of claim 5, wherein ~~said~~ the at least one spring-biased electrical contact comprises a cantilevered spring, a transversely deflecting hoop-shaped spring, a spiral-shaped spring, or a rosette spring.

9. (Currently amended) The substrate assembly of claim 5, wherein ~~said~~ the at least one spring-biased electrical contact is configured to at least partially align ~~said~~ the lead element extending from ~~said~~ the integrated circuit device relative to ~~said~~ the at least one spring-biased electrical contact.

10. (Currently amended) The substrate assembly of claim 5, wherein ~~said~~ the at least one spring-biased electrical contact further includes a permanent deflection.

11. (Currently amended) The substrate assembly of claim 5, wherein ~~said~~ the layer of resilient conductive material comprises a laminate bonded to ~~said~~ the at least one of ~~said~~ the first and second surfaces of ~~said~~ the substrate.

12. (Currently amended) The substrate assembly of claim 5, wherein ~~said~~ the layer of resilient conductive material comprises a layer of sputtered or CVD material.

13. (Currently amended) The substrate assembly of claim 5, wherein ~~said~~ the at least one spring-biased electrical contact further includes at least one contact element disposed on ~~said~~ the surface of said the at least one spring-biased electrical contact and configured to remove or puncture through a layer of contaminants formed on an exterior surface of a lead element extending from an integrated circuit device.

14. (Currently amended) The substrate assembly of claim 13, wherein ~~said~~ the at least one contact element comprises a plurality of alternating grooves and ridges, a plurality of protrusions, or a roughened surface.

15. (Currently amended) An electrical component, comprising:
a substrate having a first surface and an opposing second surface;
a layer of resilient conductive material disposed proximate at least a portion of ~~said~~ the first surface of ~~said~~ the substrate;
a plurality of spring-biased electrical contacts formed in ~~said~~ the layer of resilient conductive material, each spring-biased electrical contact of ~~said~~ the plurality of spring-biased electrical contacts electrically isolated from ~~said~~ the layer of resilient conductive material by an aperture formed in ~~said~~ the layer of resilient conductive material;
a plurality of conductive traces formed in ~~said~~ the layer of resilient conductive material, at least a portion of ~~said~~ the plurality of conductive traces each terminating at one spring-biased electrical contact of ~~said~~ the plurality of spring-biased electrical contacts, each conductive trace of ~~said~~ the plurality of conductive traces electrically isolated from ~~said~~ the layer of resilient conductive material and all other conductive traces of ~~said~~ the plurality of conductive traces by at least one cavity;
a plurality of vias disposed in ~~said~~ the substrate, each via of ~~said~~ the plurality of vias positioned at a location underlying one spring-biased electrical contact of ~~said~~ the plurality of spring-biased electrical contacts; and

at least one integrated circuit device disposed on ~~said~~ the first surface of ~~said~~ the substrate, ~~said~~ the plurality of spring-biased electrical contacts on ~~said~~ the first surface of ~~said~~ the substrate arranged in at least one array corresponding to a footprint of a plurality of lead elements extending from ~~said~~ the at least one integrated circuit device, each lead element of ~~said~~ the plurality of lead elements of ~~said~~ the at least one integrated circuit device electrically contacting one spring-biased electrical contact of ~~said~~ the plurality of spring-biased electrical contacts and downwardly deflecting ~~said~~ the one spring-biased electrical contact into one via of ~~said~~ the plurality of vias.

16. (Currently amended) The electrical component of claim 15, further comprising a clamping element securing ~~said~~ the at least one integrated circuit device to ~~said~~ the first surface of ~~said~~ the substrate and biasing ~~said~~ the plurality of lead elements extending therefrom against ~~said~~ the at least one array of spring-biased electrical contacts.

17. (Currently amended) The electrical component of claim 15, wherein at least one spring-biased electrical contact of ~~said~~ the plurality of spring-biased electrical contacts includes a permanent deflection.

18. (Currently amended) The electrical component of claim 17, wherein ~~said~~ the at least one spring-biased electrical contact is permanently deflected away from ~~said~~ the first surface of ~~said~~ the substrate.

19. (Cancelled)

20. (Currently amended) The electrical component of claim 15, wherein at least one spring-biased electrical contact of ~~said~~ the plurality of spring-biased electrical contacts is permanently deflected towards ~~said~~ the first surface of ~~said~~ the substrate and ~~said~~ the via underlying ~~said~~ the at least one spring-biased electrical contact.

21. (Currently amended) The electrical component of claim 20, wherein a surface of ~~said~~ the at least one spring-biased electrical contact and a wall of ~~said~~ the underlying via substantially traps a lead element of ~~said~~ the plurality of lead elements of ~~said~~ the at least one integrated circuit device therebetween.

22. (Currently amended) The electrical component of claim 15, wherein ~~said~~ the each spring-biased electrical contact comprises a cantilevered spring, a transversely deflecting hoop-shaped spring, a spiral-shaped spring, or a rosette spring.

23. (Currently amended) The electrical component of claim 15, wherein ~~said~~ the each spring-biased electrical contact is configured to at least partially align a mating lead element of ~~said~~ the plurality of lead elements of ~~said~~ the at least one integrated circuit device relative thereto.

24. (Currently amended) The electrical component of claim 15, wherein ~~said~~ the each spring-biased electrical contact includes at least one contact element configured to remove or puncture through a layer of contaminants formed on a surface of a mating lead element of ~~said~~ the plurality of lead elements of ~~said~~ the at least one integrated circuit device.

25. (Currently amended) The electrical component of claim 24, wherein ~~said~~ the at least one contact element comprises a plurality of alternating grooves and ridges, at least one protrusion, or a roughened surface.

26. (Currently amended) The electrical component of claim 15, further comprising:
a second layer of resilient conductive material disposed over at least a portion of ~~said~~ the second surface of ~~said~~ the substrate;
a second plurality of spring-biased electrical contacts formed in ~~said~~ the second layer of resilient conductive material, each spring-biased electrical contact of ~~said~~ the second plurality of

spring-biased electrical contacts electrically isolated from ~~said~~ the second layer of resilient conductive material by an aperture formed in ~~said~~ the second layer of resilient conductive material;

a second plurality of conductive traces formed in ~~said~~ the second layer of resilient conductive material, at least a portion of ~~said~~ the second plurality of conductive traces each terminating at one spring-biased electrical contact of ~~said~~ the second plurality of spring-biased electrical contacts, each conductive trace of ~~said~~ the second plurality of conductive traces electrically isolated from ~~said~~ the second layer of resilient conductive material and all other conductive traces of ~~said~~ the second plurality of conductive traces by at least one cavity; and

at least another integrated circuit device disposed on ~~said~~ the second surface of ~~said~~ the substrate, ~~said~~ the second plurality of spring-biased electrical contacts on ~~said~~ the second surface of ~~said~~ the substrate arranged in at least one array corresponding to a footprint of a plurality of lead elements extending from ~~said~~ the at least one other integrated circuit device, each lead element of ~~said~~ the plurality of lead elements of ~~said~~ the at least one other integrated circuit device biased against and electrically contacting one spring-biased electrical contact of ~~said~~ the second plurality of spring-biased electrical contacts.

27.-43. (Cancelled)

44. (Currently amended) The substrate assembly of claim 1, further including a dielectric layer overlying ~~said~~ the layer of resilient conductive material and having apertures therethrough substantially aligned with ~~said~~ the electrically isolated spring-biased electrical contacts.

45. (Original) The substrate assembly of claim 44, wherein the dielectric layer is of sufficient thickness to encompass at least a portion of each lead element of an integrated circuit device contacting an electrically isolated spring-biased electrical contact.

46. (Currently amended) The substrate assembly of claim 45, wherein ~~said~~ the apertures are of a frustoconical configuration decreasing in size towards ~~said~~ the layer of resilient conductive material.

47. (Currently amended) The substrate assembly of claim 3, further including a dielectric layer overlying ~~said~~ the sheet of resilient conductive material and having apertures therethrough substantially aligned with ~~said~~ the electrically isolated spring-biased electrical contacts.

48. (Original) The substrate assembly of claim 47, wherein the dielectric layer is of sufficient thickness to encompass at least a portion of each lead element of an integrated circuit device contacting an electrically isolated spring-biased electrical contact.

49. (Currently amended) The substrate assembly of claim 48, wherein ~~said~~ the apertures are of a frustoconical configuration decreasing in size towards ~~said~~ the sheet of resilient conductive material.

50. (Currently amended) The substrate assembly of claim 5, further including a dielectric layer overlying ~~said~~ the layer of resilient conductive material and having at least one aperture therethrough substantially aligned with ~~said~~ the at least one electrically isolated spring-biased electrical contact.

51. (Currently amended) The substrate assembly of claim 50, wherein the dielectric layer is of sufficient thickness to encompass at least a portion of at least one lead element of an integrated circuit device contacting ~~said~~ the at least one electrically isolated spring-biased electrical contact.

52. (Currently amended) The substrate assembly of claim 51, wherein ~~said the~~ at least one aperture is of a frustoconical configuration decreasing in size towards ~~said the~~ layer of resilient conductive material.

53. (Currently amended) The electrical component of ~~claim 15,~~ claim 15, further including a dielectric layer overlying ~~said the~~ layer of resilient conductive material and having apertures therethrough substantially aligned with ~~said the~~ electrically isolated spring-biased electrical contacts.

54. (Currently amended) The substrate assembly of claim 53, wherein the dielectric layer is of sufficient thickness to encompass at least a portion of each lead element of ~~said the~~ at least one integrated circuit device contacting an electrically isolated spring-biased electrical contact.

55. (Currently amended) The substrate assembly of claim 54, wherein ~~said the~~ apertures of the dielectric layer are of a frustoconical configuration decreasing in size towards ~~said the~~ layer of resilient conductive material.

56.-65. (Cancelled)

66. (Currently amended) A substrate assembly, comprising:
a substrate having a first surface and an opposing second surface;
a layer of resilient conductive material proximate at least a portion of at least one of ~~said the~~ first and second surfaces of ~~said the~~ substrate;
at least one spring-biased electrical contact formed in ~~said the~~ layer of resilient conductive material and electrically isolated from ~~said the~~ layer of resilient conductive material by an aperture formed in ~~said the~~ layer of resilient conductive material, ~~said the~~ at least one

spring-biased electrical contact including a surface configured for biasing against and electrically contacting a lead element extending from an integrated circuit device; at least one conductive trace formed in ~~said~~ the layer of resilient conductive material and electrically isolated from ~~said~~ the layer of resilient conductive material by at least one cavity, ~~said~~ the at least one conductive trace terminating at ~~said~~ the at least one spring-biased electrical contact; and wherein ~~said~~ the at least one spring-biased electrical contact further includes at least one contact element disposed on ~~said~~ the surface of ~~said~~ the at least one spring-biased electrical contact and configured to remove or puncture through a layer of contaminants formed on an exterior surface of the lead element extending from an integrated circuit device, ~~said~~ the at least one contact element comprising a plurality of alternating grooves and ridges, a plurality of protrusions, or a roughened surface.

67. (Currently amended) An electrical component, comprising:
a substrate having a first surface and an opposing second surface;
a layer of resilient conductive material disposed proximate at least a portion of ~~said~~ the first surface of ~~said~~ the substrate;
a plurality of spring-biased electrical contacts formed in ~~said~~ the layer of resilient conductive material, each spring-biased electrical contact of ~~said~~ the plurality of spring-biased electrical contacts electrically isolated from ~~said~~ the layer of resilient conductive material by an aperture formed in ~~said~~ the layer of resilient conductive material;
a plurality of conductive traces formed in ~~said~~ the layer of resilient conductive material, at least a portion of ~~said~~ the plurality of conductive traces each terminating at one spring-biased electrical contact of ~~said~~ the plurality of spring-biased electrical contacts, each conductive trace of ~~said~~ the plurality of conductive traces electrically isolated from ~~said~~ the layer of resilient conductive material and all other conductive traces of ~~said~~ the plurality of conductive traces by at least one cavity;

at least one integrated circuit device disposed on ~~said~~ the first surface of ~~said~~ the substrate, ~~said~~ the plurality of spring-biased electrical contacts on ~~said~~ the first surface of ~~said~~ the substrate arranged in at least one array corresponding to a footprint of a plurality of lead elements extending from ~~said~~ the at least one integrated circuit device, each lead element of ~~said~~ the plurality of lead elements of ~~said~~ the at least one integrated circuit device biased against and electrically contacting one spring-biased electrical contact of ~~said~~ the plurality of spring-biased electrical contacts; and

wherein ~~said~~ the each spring-biased electrical contact includes at least one contact element configured to remove or puncture through a layer of contaminants formed on a surface of a mating lead element of ~~said~~ the plurality of lead elements of ~~said~~ the at least one integrated circuit device, ~~said~~ the at least one contact element comprising a plurality of alternating grooves and ridges, at least one protrusion, or a roughened surface.